

THE CHARACTERISTICS OF THE ELACATIDS.

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[With Plate XXXIX.]

The genus *Elacate* had been considered to be an undoubted member of the Scombrid or Carangid families till its title to separation therefrom as the type of a distinct family was suggested by the present writer in 1862. There were, however, no good reasons for such intimate union with the Scombrids, the rather slender caudal peduncle, procurrent rays of the caudal fin and free spines of the back being the only external characteristics. The retention of the genus in the family of Scombrids limited by the exclusion of the Carangids was one of those intellectual (or rather mental) freaks difficult to account for, as the only reason that could be assigned was that it had twenty-five vertebræ, while the term *Carangidæ* was limited nominally to species that had twenty-four, although really many species rightly referred to it had twenty-five or other than twenty-four. There can, however, be no reasonable doubt that *Elacate* should be isolated in a family distinct from either the *Scombridæ* or *Carangidæ*, and not closely related to any other. The supposed affinity of the *Echeneidids* to it is purely imaginary, although it has been believed in by so many naturalists who should have known better. Even Professor Jordan, in his latest works, has continued to keep them as neighbors. But although the family of *Elacatidæ* has been long named and a formal description of it has been published by Professors Jordan and Gilbert, the distinctive characteristics have never yet been given. To this long-delayed duty the following is a contribution.

ELACATIDÆ.

Synonyms as family names.

- =*Elacatoidæ* GILL, MSS., 1862.*
- =*Elacatidi* POEY, Repert. Fis.-Nat. de Cuba, p. 376, 1868. (Not defined.)
- =*Elacatidæ* GILL, Rep. Com. Fish and Fisheries, pt. 1, p. 807; Cat. Fishes E. Coast N. A., p. 29, 1873. (Not defined.)
- =*Elacatidæ* POEY, Anal. Soc. Esp. de Hist. Nat., t. 4, p. 161, 1875. (Not defined.)
- =*Elacatidæ* JORDAN & GILBERT, Syn. Fishes N. A., pp. 397, 418, 1882.
- Scombridæ* gen. GÜNTHER *et al.*

*The advisability of the separation of *Elacate* from the Carangids was first indicated by Gill (Proc. Acad. Nat. Sc., Phila., 1862, p. 239) in the remark that it "probably represents another family," and soon afterwards (*op. cit.*, p. 430) the genus was actually excluded. In a "review of Holbrook's Ichthyology of South Carolina" (Am. Journ. Sc. and Arts (2), v. 36, p. 91, Jan., 1864), the genus was also indicated as the type of a distinct family in the statement that "all the Scombridæ of Holbrook are Carangoids, except *Cybbium*, *Elacate*, *Echencis*, and perhaps *Temnodon*, members of as many different families."

Diagnosis.

Acanthopterygians with a depressed, broad, distegous cranium, the *medifrontines* double, plane, sculptured, and perfectly ecarinate; the *sphenotics* with the upper surface plane and scarcely declivous; the *parethmoids* exerted, with the upper surface nearly continuous with the medifrontines and the lower with the parasphenoid, and imperforate; the *prosthmoid* with a large and nearly square tabular surface and a short declivous portion at a very obtuse angle with the former; the *supraoccipitine* with an anterior ecarinate plane portion and a posterior cristiform portion; the lateral *posterior crests* very low, depressed, and ceasing at the medifrontines; the *basioccipitine* solid below; the *exoccipitine condyles* distant from each other; the *parasphenoid* very broad and ecarinate; the contour of the body fusiform; the head wedge-shaped and broad; the scales small and cycloid; the caudal fin with procurrent raylets; dorsal fin long and preceded by free spines reclinable in grooves, and normal pectoral and ventral fins.

Description of external characters.

Body elongate, with a fusiform contour, gradually tapering into a stout and contracted caudal peduncle, and widening forwards towards the head.

Anus submedian, or slightly in advance of the middle.

Scales very small, cycloid, smooth, and closely adherent to the skin.

Lateral line indistinct and nearly parallel with the back.

Head cuneiform, oblong conic in profile and wide and oblong above, with the epicranial muscles atrophied, and consequently the bones of the cranium apparent through the skin, revealing a sculptured or striated surface.

Eyes within the anterior half of the length, entirely lateral and below the profile, and of small size.

Nostrils normal, the apertures on each side divided by a narrow bridge.

Mouth with a moderately oblique, lateral cleft.

Jaws normally developed; the *intermaxillines* with short laminar pedicles, tapering branches distinct from the articular facets, and obliquely set, thus leaving a triangular interval in front, with indentations at the bases of the pedicles; the *supramaxillines* widening behind and downwards, and partially withdrawing under the preorbitals; *mandible* rather low, and contracted behind the symphysis, and articulating under the eye.

Teeth small, acutely conic, in broad bands on the jaws, vomer, palatine, and tongue.

Lips thin, normally developed.

Tongue moderate.

Suborbital bone normally developed, the preorbital extending forwards.

Opercular apparatus normally developed; the *operculum* of a subquadrate form, with its upper margin horizontal, the *suboperculum* under and partly behind the operculum, and the *interoperculum* under and mostly covered by the preoperculum.

Preoperculum without a crest or armature.

Branchial apertures continuous below, the *branchiostegal membrane* being separated at the middle and partially overlapping in front.

Branchiostegals seven, five belonging to the ceratohyal and two to the epihyal.

Dorsal furniture consisting of seven or eight short, stout, and free spines, each with a special membrane, depressible in grooves, and a long fin, with branched rays, commencing in advance of the middle of the length.

Anal fin shorter than the dorsal and coterminous with it, resembling it in form, with a small spine in front, and preceded by a still smaller free spine.

Caudal fin strong, moderately forked behind, and with a number of raylets above and below.

Pectoral fins normally developed, with a rather low base of insertion, and pointed behind.

Ventrals thoracic, approximated, each with a spine and five branched rays decreasing inwards.

Branchial arches normally developed, the last separated by a slit from the hypopharyngeals.

Gill-rakers short and stout.

Hypopharyngeal bones separated, together forming an elongated triangle, deeply cleft, and with the external submarginal crests extended downwards into keels and continued into the posterior processes; third epipharyngeals mushroom-like.

The diagnosis thus given is the result of comparison of the cranium with those of various generic types of the families of *Scombridae* and *Carangidae*, all of which contrast remarkably with that of *Elacate*. The vertebrae are of the same type as those of the *Scombroidea* generally. It may not be entirely needless to repeat that in the characteristics referred to, as well as in almost all others, the Elacatids differ entirely from the Echeineidids. The affinities of the type appear to be as intimate, if not more intimate, with the Carangids than with any other family, so far as known; but it remains to be ascertained whether such is really the case.

How different the cranial characteristics of the Elacatids and Echeineidids are may be judged from a comparison of the illustrations of the cranium of *Elacate* herewith given and those of the cranium of *Echeineis* published in the Proceedings of the U. S. National Museum for 1882 (v. 5, pp. 561-566, pl. 12). The differences of other parts are in some cases of nearly equal value and in others of even greater importance.